

TWO NEW DEEP-WATER SPECIES OF THE GUTLESS GENUS *OLAVIUS* (OLIGOCHAETA: TUBIFICIDAE) FROM BOTH SIDES OF NORTH AMERICA

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Abstract.—*Olavius tannerensis*, new species, from the continental shelf off California, and *O. rallus*, new species, from off North Carolina, are described. The former is the first member of the genus known from the Pacific coast of North America, the latter the first gutless oligochaete collected at bathyal depths (583 m). Both species have small atria and complex copulatory sacs, but they lack penial setae. They are distinguished from each other by the location of their spermathecal pores.

The gutless oligochaetes, over 50 described species within *Inanidrilus* Erséus, 1979a and *Olavius* Erséus, 1984, are common in shallow marine waters of tropical and subtropical areas. They are particularly well represented in the poorly oxygenated carbonate sands of coral reefs (Giere et al. 1984; Erséus 1984, 1990). Only three species (of *Olavius*) have been found in deeper (>100 m), colder waters. *Olavius tenuissimus* (Erséus, 1979b) and *O. cornuatus* Davis, 1984 occur to at least about 140 m depth on Georges Bank, off Massachusetts in the Northwest Atlantic (Davis 1984, 1985), and *O. macer* Erséus, 1984 was described from a single station at 170 m in the eastern part of the Gulf of Mexico (Erséus 1984).

In the present paper, two additional deep-water species of *Olavius* are described. *Olavius tannerensis*, new species, is the first gutless oligochaete recorded from the Pacific coast of North America, *O. rallus*, new species, the first one from bathyal depths; the latter was found at 583 m off North Carolina (Northwest Atlantic).

Material and Methods

The material of *O. tannerensis* was found in a collection of oligochaetes from the Bureau of Land Management (BLM) Outer

Continental Shelf Project in the Southern California Bight, placed at the author's disposal by the Allan Hancock Foundation, University of South California, Los Angeles (courtesy, Dr. J. Kudenov; now at University of Alaska, Anchorage). The specimen of *O. rallus* originates from the Study of Biological Resources on the U.S. South Atlantic Continental Slope and Rise (Blake et al. 1987), supported by contract number 14-12-0001-30064 from the U.S. Department of Interior, Minerals Management Service, to Battelle New England Marine Research Laboratory, Woods Hole Oceanographic Institution, and Lamont-Doherty Geological Observatory (courtesy, Dr. Nancy Maciolek-Blake).

The worms were stained in paracarmine and mounted whole in Canada balsam prior to examination. Types are deposited at the Los Angeles County Museum of Natural History (LACM), Los Angeles, California, and at the National Museum of Natural History (USNM), Washington, D.C.

Olavius tannerensis, new species
Fig. 1A, B

Holotype.—LACM AHF 1528, whole-mounted specimen from Tanner Bank, Southern California Bight, 173 m, coarse sand with shell (BLM project Sta. no. 81828).

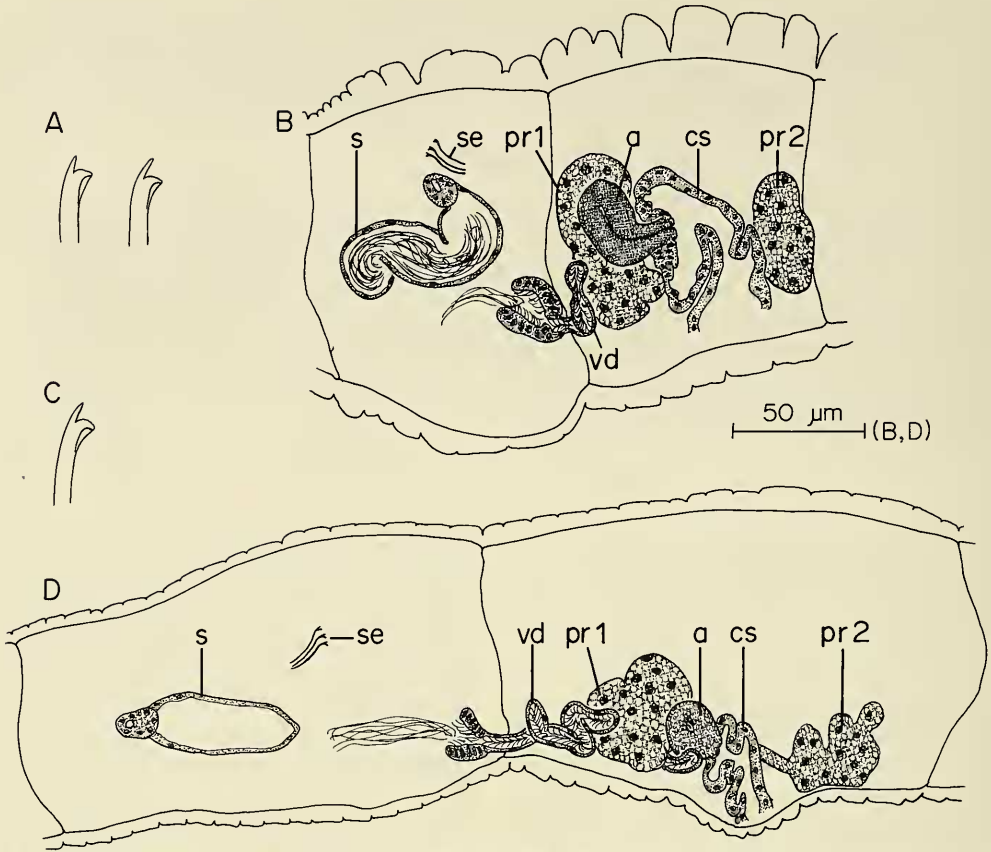


Fig. 1. A, B. *Olavius tannerensis*. A, Free-hand drawing of setae; B, Lateral view of spermatheca and male genitalia in segments X–XI; C, D, *Olavius rallus*. C, Free-hand drawing of seta; D, Lateral view of spermatheca and male genitalia in segments X–XI. Abbreviations.—a, atrium; cs, copulatory sac; pr1, anterior prostate gland; pr2, posterior prostate gland; s, spermatheca; se, setae; vd, vas deferens.

Paratype.—USNM 136576, specimen from type locality.

Etymology.—Named *tannerensis* for the type locality, Tanner Bank.

Description.—Holotype not complete; paratype 5.3 mm long, 46 segments. Width at XI 0.15 mm. Prostomium and pygidium small, elongate with rounded tips. Body round in cross-section. Clitellum extending over $\frac{1}{2}$ X–XII. Secondary annulation conspicuous, annuli 5–7 per (postclitellar) segment. Setae (Fig. 1A) bifid, wide subdental ligaments, and with upper teeth variably long but always thinner than lower teeth. Setae 26–37 μ m long, 1–2, μ m thick, (2)3 per bundle anteriorly, 2 per bundle in postclitellar

segments. Penial setae absent. Male pores paired in line with ventral setae, posteriorly in XI. Spermathecal pores paired, immediately antero-ventral to dorsal setae in X (see Fig. 1B).

Alimentary canal absent. Male genitalia (Fig. 1B) paired. Vas deferens 5–7 μ m wide, longer than atrium; junction with latter not observed. Atrium somewhat curved, pear-shaped, about 30–40 μ m long, 21–25 μ m wide, with very thin outer lining and thick, granulated inner epithelium, opening into inner part of large, folded copulatory sac. Two prostate glands present, but attachments with atrium not observed. Spermathecae (Fig. 1B, s) with very short ducts,

and elongate, very thin-walled ampullae; latter 70–100 μm long, 20–27 μm wide, containing large random masses of sperm.

Remarks.—As indicated by the small atria, the well developed copulatory sacs, and, in particular, the unusual location of the spermathecal pores near the dorsal setae in segment X, *Olavius tannerensis* is closely related to the northwest Atlantic *O. tenuissimus* (redescribed by Erséus 1990) and *O. finitimus* Erséus, 1990. However, the new species is readily distinguished from these taxa by its lack of penial setae.

See also Remarks for *O. rallus* below.

Distribution and habitat.—Known only from the type locality off southern California, NE Pacific. Subtidal coarse sand, 173 m depth.

Olavius rallus, new species

Fig. 1C, D

Holotype.—USNM 136577, whole-mounted specimen from the continental slope off Cape Lookout, North Carolina, U.S.A., 34°16.2'N, 75°45.8'W, 583 m (November 1983; courtesy N. Maciolek-Blake).

Etymology.—Named *rallus* (Latin for 'thin') for its slenderness.

Description.—Length 7.4 mm, 39 segments. Width at XI 0.13 mm. Prostomium and pygidium small, somewhat triangular. Body round in cross-section. Clitellum extending over $\frac{1}{2}$ X–XI. Secondary annulation indistinct. Setae (Fig. 1C) bifid, with subdental ligaments, and with upper teeth thinner and slightly shorter than lower teeth. Setae about 30 μm long, 1–1.5 μm thick, 3 per bundle anteriorly, 2 per bundle in post-clitellar segments. Penial setae absent. Male pores paired in line with ventral setae, posteriorly in XI. Spermathecal pores paired in line with dorsal setae, in anterior part of X, about mid-way between septum 9/10 and dorsal setae of X (See Fig. 1D).

Alimentary canal absent. Male genitalia (Fig. 1D) paired. Vas deferens 7–9 μm wide, longer than atrium; but junction with latter

not observed. Atrium small, somewhat pear-shaped, about 25 μm long, about 20 μm wide, with very thin outer lining and thick, granulated inner epithelium, opening into inner part of small, folded copulatory sac. Two prostate glands present, posterior one attached to atrium by long stalk. Spermathecae (Fig. 1D, s) with very short ducts, and elongate, very thin-walled ampullae; latter about 55 μm long, about 20 μm wide, but devoid of sperm (specimen precopulatory).

Remarks. The male genitalia of *O. rallus* are virtually indistinguishable from those of *O. tannerensis* described above, but the spermathecal pores of the former are distinctly more anterior than those of the latter.

Olavius rallus is also very similar (e.g., with regard to the more anterior position of the spermathecal pores) to *O. vacuus* Erséus, 1990, a largely Caribbean species that has been found as far north as in Chesapeake Bay, Virginia (Erséus 1990). *Olavius vacuus*, however, always bears a filiform process on its pygidium and generally has a large papilla inside the wall of each copulatory sac.

Distribution and habitat.—Known only from the type locality off North Carolina, NW Atlantic. Bathyal sediments, 583 m depth.

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